

US EPA ARCHIVE DOCUMENT



Chapter 1

Introducing Full Cost Accounting

Historically, local governments have tended to use *cash flow accounting* (also called general fund accounting) to track the flow of current *financial resources* (dollars). This accounting system records outlays when cash is actually paid for goods and services. It helps government agencies account for the expenditure of tax dollars and other public funds.

While FCA is consistent with generally accepted accounting principles, it serves different goals and audiences than traditional government accounting reports. FCA is not the same as cash flow or general fund accounting. FCA focuses on the flow of *economic resources* (assets) and accrues (i.e., recognizes) costs as resources are used or committed, regardless of when money is spent. Because solid waste management can entail significant expenditures both before and after the operating life of management facilities, focusing solely on the use of current financial resources misrepresents the costs of MSW management and can be misleading.

The Government Accounting Standards Board, in its Generally Accepted Accounting Principles (GAAP),² endorses the use of accrual accounting practices like FCA. Many cities and counties are required to conform to GAAP. Unfortunately, accrual accounting is not fully implemented or used in day-to-day solid waste management. Most local government accounting, even under GAAP, still focuses on the use of financial resources. FCA is a better measure of the costs of MSW management because it recognizes the full costs of all resources used or committed in support of operations.

Exhibit 1-1 lists the spectrum of costs associated with MSW management, along with examples. This *Handbook* focuses on three major types of costs that are relatively easy to determine:

- *Up-front costs* comprise the initial investments and expenses necessary to implement MSW services.
- *Operating costs* are the expenses of managing MSW on a daily basis.
- *Back-end costs* include expenditures to properly wrap up operations and take proper care of landfills and other MSW facilities at the end of their useful lives; the costs of post-employment health and retirement benefits for current MSW workers also fall in this category.

How FCA Is Different

An FCA report differs from current municipal accounting and reporting practices that address different goals and audiences. For the most part, local government financial statements (including enterprise fund accounting) do not focus on the flow of economic resources or use the accrual basis of accounting, which are cornerstones of FCA.

Understanding the Costs Used in FCA

These three categories together cover the “life cycle” of MSW activities from “cradle” (up-front costs) to “grave” (back-end costs).³ These costs give an accurate and useful accounting for management and reporting.

The other categories of costs listed in Exhibit 1-1 can be included in the scope of FCA, but require special consideration, as noted below. These costs are:

- *Remediation costs at inactive sites.* Many local governments have inactive MSW landfills that require “corrective action” for known contamination of ground water, soil, or surface water. These remediation costs can be relatively well estimated,⁴ though with somewhat more uncertainty than other types of engineering projects such as roadbuilding.

Case in Point Lafayette, Indiana

In 1992, Lafayette and West Lafayette, Indiana, reported substantially different average costs per household for solid waste management. The difference turned out to largely reflect costs for yard waste and cleanup of a former landfill; West Lafayette included those costs in its calculations while Lafayette did not.

Including these costs in FCA is a matter of choice. Because remediation costs are real and must be paid, they can be included; moreover, they are the result of past solid waste management practices and are thus relevant. On the other hand, incorporating such remediation costs for inactive landfills, which are not strictly costs of current MSW management, could give a misleading impression of current MSW costs.

The decision to include remediation costs depends on the intended use of the FCA information. For example, if you are using FCA to document the revenue needs of an MSW program, you might want to include costs entailed by inactive sites. If you intend to use FCA to reveal the current economics (e.g., cost per ton) of current MSW management or compare your performance to other communities or state benchmarks, you might want to exclude inactive site costs from such calculations.

- *Contingent costs* are costs that might or might not be incurred at some point in the future. These costs can best be described in probabilistic terms: their expected value, their range, or the probability of their exceeding some dollar amount. Examples include the costs of remediating

Remediation Costs

Factors to consider in determining how to handle remediation expenditures are:

- Probability of occurrence
- Status of sites

	Active Site	Inactive Site
Known need to remediate (noncontingent cost)	Include in FCA as operating cost	Optional (not a cost of current activities)
Potential future need to remediate (contingent cost)	Optional (might not turn out to be a cost)	Optional (might not arise and not related to current activities)

Exhibit 1-1

Types and Examples of MSW Management Costs

Up-Front Costs

- Public education and outreach
- Land acquisition
- Permitting
- Building construction/modification

Operating Costs

- Normal costs
 - Operation and maintenance (O&M)
 - Capital costs
 - Debt service
- Unexpected costs

Back-End Costs

- Site closure
- Building/equipment decommissioning
- Post-closure care
- Retirement/health benefits for current employees

Remediation Costs at Inactive Sites

- Investigation, containment, and cleanup of known releases
- Closure and post-closure care at inactive sites

Contingent Costs

- Remediation costs (undiscovered and/or future releases)
- Liability costs (e.g., property damage, personal injury, natural resources damage)

Environmental Costs

- Environmental degradation
- Use or waste of upstream resources
- Downstream impacts

Social Costs

- Effects on property values
- Community image
- Aesthetic impacts
- Quality of life

unknown or future releases of pollutants, such as leaks from currently operating municipal landfills. Contingent costs also include the liability costs of compensating for as yet undiscovered or future damage to property or persons adversely affected by MSW services. Both of these types of contingent costs can be projected, but not very precisely. (In contrast, where there is a known need to remediate, costs can be projected much more precisely.) Insurance premiums for appropriate coverages, if available, could serve as surrogates for the contingent liability costs of property damage and personal injury. You will need to decide whether or not to include these elements in FCA.

- *Environmental costs* are the costs of environmental degradation that cannot be easily measured or remedied, are difficult to value, and are not subject to legal liability. Such environmental costs often are termed

“externalities” by economists. To truly capture all of the important life-cycle cost elements, some people advocate assessing the upstream (and downstream) environmental costs of resource use, pollution, and waste entailed in providing goods and services. For example, manufacturing and transporting MSW management equipment and vehicles can entail environmental impacts prior to their use, such as depletion of nonrenewable mineral resources, air and water pollution, and waste generation. In addition, downstream environmental impacts can also arise from the eventual decommissioning or ultimate disposal of the MSW equipment and vehicles. You’ll need to decide whether your FCA efforts should attempt to include environmental and upstream/downstream costs, for which widely accepted measurement and valuation methodologies do not yet exist.

- *Social costs* are adverse impacts on human beings, their property, and their welfare that cannot be compensated through the legal system. Social costs (also termed “social externalities”) are similar to environmental externalities and are sometimes grouped together under an umbrella term. Just as with environmental externalities, the costs of social externalities can be difficult to determine. While FCA focuses on costs that can be valued readily in the marketplace, understanding social costs is important for planning efforts. Social costs include the impacts of MSW transport on neighborhoods along the routes taken, as well as the impacts of MSW facilities themselves. Issues of “environmental justice” can arise for planners when any of the following fall disproportionately on certain social groups: (1) adverse effects on property values, community image, and aesthetics; (2) opportunity costs of alternative and future land uses; and (3) noise, odor, and traffic. This *Handbook* does not attempt to monetize social costs or describe methodologies for doing so, although some references⁵⁻⁷ are provided from a growing body of knowledge aimed at better characterizing and valuing these impacts.

Exhibit 1-2 lists the types of costs that can be included in FCA and summarizes the methodologies for estimating those costs.

Whose Costs FCA Can Include

When summing costs, a key question to consider is “whose costs to include?” FCA can include:

- Local government solid waste organization costs only
- All local government costs
- Costs incurred by private sector service providers not covered above
- Costs incurred by the customer base not covered above
- Residential, commercial, or all customers
- Costs incurred by volunteer and nongovernmental groups

Exhibit 1-2

FCA Methodologies

Cost Category	Methodology
Up-front Costs	Identify up-front outlays Uncover hidden costs and include oversight and support outlays Depreciate up-front outlays
Operating Costs	Identify operating outlays Depreciate capital outlays Uncover hidden costs Add in oversight and support outlays
Back-End Costs	Estimate back-end outlays Include oversight and support outlays Amortize estimated back-end outlays
Remediation Costs	Estimate outlays and duration; annualize
Contingent Costs	Estimate probability and magnitude of costs Estimate expected value; annualize
“Environmental Costs”	Describe environmental “externalities” Monetize (e.g., contingent valuation, damage function approach)
“Social Costs”	Describe social “externalities” Monetize (e.g., contingent valuation, damage function approach)

Your state’s laws might determine which of these costs to include. For example, the Indiana FCA law requires local governmental units that provide solid waste management to calculate and report both the full and per capita costs of such services. In Indiana, costs should be included for any MSW service a community provides either directly or indirectly through contract or franchise services. Services provided independently by private companies not under municipal contract or franchise are not included.

Local Government Costs. Communities that handle MSW management through enterprise funds frequently employ a form of FCA, often defining the scope in terms of all or most local government costs, but sometimes

Case in Point Including Collection Costs in Indiana

If an Indiana town owns and operates a landfill but performs no collection services, should collection costs be included in FCA? If the town has nothing at all to do with collection, collection costs should not be included. If the town monitors the performance of private waste collection firms or otherwise expends resources to oversee collection services, then the town’s costs should be included in FCA. If the town contracts for or franchises collection services, collection costs should be included.

solely in terms of the costs incurred by the government unit responsible for MSW. State and local accounting rules and practices can strongly influence financial accounting and reporting for MSW enterprise funds.

Private Sector Costs

In many communities, the private sector provides some or all MSW services, whether independently, under contract with a local government, or through a franchise arrangement. FCA need not unduly burden such service providers. You do not need detailed, proprietary information to determine full costs. Collecting some basic service and price data should be sufficient to allow you to prepare FCA reports.

Service Vendor Costs. Where MSW services are provided independently of local governments, vendors bill or charge their customers to recover their costs and some profit. The prices set for these customers become the costs incurred by the customer base. These costs are quite clear to customers and need not be part of FCA. On the other hand, FCA can be used to describe the costs of the complete MSW system by adding local government costs to costs paid directly by citizens.

Service Customer Costs. The customer base also incurs costs not covered above that are usually not measured or valued, but could be included in FCA. These costs reflect the customers' time and materials costs of separating and preparing recyclables, putting

MSW on the curbside for pickup, and so on. Because these costs are not hidden from the customers (who incur them directly), they can be omitted from FCA, which aims to uncover costs that are not necessarily clear to customers or public officials.

Types of Customers. Another important issue is deciding whether FCA should be applied to residential, commercial, industrial, institutional, or all system customers. It can be useful to account separately for commercial, industrial, institutional, and residential customers and not combine the costs of serving such potentially different customer bases.

Costs of Volunteers. Volunteers and nongovernmental organizations also might incur costs not covered above to support MSW management. For example, many community groups (and businesses) have volunteered to "adopt" stretches of roads and highways for litter control. Volunteer help might take the form of "paper drives" or assistance at recycling drop-off centers. A community group might organize a public education campaign. (See discussion "Uncovering Hidden Costs" in Chapter 4.)

Whatever the decision, FCA reports should be explicit about their scope, both in terms of which types of costs and whose costs are included.